WHAT IS CLAIMED IS:

1. A process for hydroforming a tube of ductile solid material, the process comprising:

(I) providing a pressure-side fluid and an openable die having an interior surface of a shape to which it is desired to have the hydroformed part of the outer surface of the tube of ductile solid material conform after the tube has been hydroformed;

(II) forming over the outer surface of the tube of ductile solid material a coating of a die-side lubricant selected form the group consisting of:

1. a liquid lubricant comprising an oil and a surfactant;

2. a solid lubricant comprising a wax wherein the stress value within the solid die-side lubricant 0.75 sec after the compressive stress began to be imposed is at least 540 kPa; the stress value within the solid die-side lubricant 100 sec. after the compressive stress began to be imposed is at least 300 kPa; and the residual stress within the solid die-side lubricant 100 sec after the compressive stress began to be imposed is at least 75 percent of the maximum stress induced within the solid lubricant at any time up to 100 sec after the stress began to be imposed; and

3. mixtures thereof.

(III) emplacing the coated ductile tube within at least a part of said openable die and closing the die, so that a portion of the outer surface of the ductile tube that is desired to be hydroformed is within the closed openable die;

(IV) filling the interior of the tube of ductile solid with a volume of said pressure-side fluid, so that said pressure-side fluid exerts essentially equal pressure on all parts of the internal

surface of the tube of ductile solid with which the pressure-side fluid is in physical contact; and

(V) applying to said volume of pressure-side fluid filling said interior of the ductile tube, while the ductile tube remains emplaced within the closed openable die as recited in operation (III) above, a sufficient pressure to cause at least a portion of the outer surface of the coated ductile tube to conform to the inner surface of the closed openable die.

2. The process of claim 1, wherein the stress value within the solid die-side lubricant 0.75 sec after the compressive stress began to be imposed is at least 540 kPa.

3. The process of claim 1, wherein the stress value within the solid die-side lubricant 0.75 sec after the compressive stress began to be imposed is at least 580 kPa.

4. The process of claim 1, wherein the stress value within the solid die-side lubricant 100 sec. after the compressive stress began to be imposed is at least 450 kPa.

5. The process of claim 1, wherein the stress value within the solid die-side lubricant 100 sec. after the compressive stress began to be imposed is at least 550 kPa.

6. The process of claim 1, wherein the residual stress within the solid die-side lubricant 100 sec after the compressive stress began to be imposed is at least 82 percent of the maximum stress induced within the solid lubricant at any time up to 100 sec after the stress began to be imposed.

7. The process of claim 1, wherein the residual stress within the solid die-side lubricant 100 sec after the compressive stress began to be imposed is at least 90 percent of the maximum stress induced within the solid lubricant at any time up to 100 sec after the stress began to be imposed.

8. The process of claim 1, wherein the oil is selected from the group consisting of vegetable oils, blown vegetable oils, polymers of vegetable oils, animal oils, and blown animal oils, and mixtures thereof.

9. The process of claim 1, wherein the oil is selected from the group consisting of blown canola oil, blown fish oil, canola oil, blown rapeseed oil, naphthenic oil, and mixtures thereof.

10. The process of claim 1, wherein the surfactant is a non-ionic surfactant.

11. The process of claim 10, wherein the surfactant is selected from the group consisting of vegetable oil ethoxylates, ethoxylates of alkyl alcohols, ethoxylates of acetylenic diols, block copolymers of ethylene and propylene oxides, ethoxylates of alkyl carboxylates, alkyl polyglycosides, and mixtures thereof.

12. The process of claim 10, wherein the surfactant is present in an amount of about 0.1% to 10% of the total weight of the liquid film composition.

13. The process of claim 10, wherein the surfactant is present in an amount of about 1.0% to 5% of the total weight of the liquid film composition.

14. The process of claim 10, wherein the surfactant is present in an amount of about 2.5%of the total weight of the liquid film composition.

15. The process of claim 1, wherein the wax is selected from the group consisting of carnauba wax, candelilla wax, montan wax, microcrystalline waxes, solid alcohols, solid esters, and oxidized petroleum waxes.

16. The process of claim 1, wherein the wax is a primary alcohol having at least 18 carbon atoms per molecule.

17. The process of claim 1, wherein the wax is an ester of a primary alcohol having at least 18 carbon atoms per molecule with an organic acid.

18. The process of claim 1, wherein the organic acid is an unbranched monoacid, having at least 18 carbon atoms per molecule.

19. The process of claim 1, wherein the solid lubricant further comprises a surfactant.

20. The process of claim 19, wherein the surfactant is a non-ionic surfactant.

21. The process of claim 19, wherein the surfactant is selected from the group consisting of vegetable oil ethoxylates, ethoxylates of alkyl alcohols, ethoxylates of acetylenic diols, block copolymers of ethylene and propylene oxides, ethoxylates of alkyl carboxylates, alkyl polyglycosides, and mixtures thereof

22. The process of claim 19, wherein the surfactant is present in an amount of about 0.05% to 10% of the total weight of the dry film composition.

23. The process of claim 19, wherein the surfactant is present in an amount of about 1.0% to 5% of the total weight of the dry film composition.

24. The process of claim 19, wherein the surfactant is present in an amount of about 1%of the total weight of the dry film composition.

25. The process of claim 1, wherein the solid lubricant further comprises a wetting agent.

26. The process of claim 25 wherein the wetting agent is selected from the group consisting of nonionic fluorosurfactants, anionic fluorosurfactants, ethoxylated tetramethyldecynediols, acetylenic glycol-based surfactants, dialkylsulfosuccinates, and mixtures thereof.

27. The process of claim 25 wherein the wetting agent is a fluoroaliphatic ethoxylates.

28. The process of claim 25 wherein the wetting agent is a present in an amount of 0.1% to 1.0% of the weight of the dry film composition.

29. The process of claim 25 wherein the wetting agent is a present in an amount of 0.1% to 0.5% of the weight of the dry film composition.

30. A liquid film lubricant comprising:

an oil; and

a surfactant,

wherein the liquid film lubricant has the characteristic that the coefficient of friction is reduced when the liquid film lubricant is wetted as compared to the coefficient of friction of the liquid film lubricant is unwetted.

31. The liquid film lubricant of claim 30, wherein the oil is selected from the group consisting of vegetable oils, blown vegetable oils, polymers of vegetable oils, animal oils, and blown animal oils. and mixtures thereof.

32. The liquid film lubricant 30, wherein the oil is selected from the group consisting of blown canola oil, blown fish oil, canola oil, blown rapeseed oil, naphthenic oil, and mixtures thereof.

33. The liquid film lubricant of claim 30, wherein the surfactant is a non-ionic surfactant.

34. The liquid film lubricant of claim 33, wherein the surfactant is selected from the group consisting of vegetable oil ethoxylates, ethoxylates of alkyl alcohols, ethoxylates of acetylenic diols, block copolymers of ethylene and propylene oxides, ethoxylaters of alkyl carboxylates, alkyl polyglycosides and mixtures thereof.

35. The liquid film lubricant of claim 33, wherein the surfactant is present in an amount of about 0.1% to 10% of the total weight of the liquid film lubricant.

36. The liquid film lubricant of claim 33, wherein the surfactant is present in an amount of about 1.0% to 5% of the total weight of the liquid film lubricant.

37. The liquid film lubricant composition of claim 33, wherein the surfactant is present in an amount of about 2.5%of the total weight of the liquid film lubricant.

38. A solid film lubricant comprising:

a wax; and

a surfactant,

wherein the solid film lubricant has the characteristic that the

coefficient of friction is reduced when the solid film lubricant is wetted as compared to the coefficient of friction of the solid film lubricant is unwetted.

39. The solid film lubricant of claim 38, wherein the wax is selected from the group consisting of carnauba wax, candelilla wax, montan wax, microcrystalline waxes, solid alcohols, solid esters, and oxidized petroleum waxes.

40. The solid film lubricant of claim 38, wherein the wax is a primary alcohols having at least 18 carbon atoms per molecule.

41. The solid film lubricant of claim 38, wherein the wax is an ester of a primary alcohol having at least 18 carbon atoms per molecule with an organic acid.

42. The solid film lubricant of claim 38, wherein the organic acid is an unbranched monoacid, having at least 18 carbon atoms per molecule.

43. The solid film lubricant of claim 38, wherein the surfactant is a non-ionic surfactant.

44. The solid film lubricant of claim 38, wherein the surfactant is selected from the group consisting of vegetable oil ethoxylates, ethoxylates of alkyl alcohols, ethoxylates of acetylenic diols, block copolymers of ethylene and propylene oxides, ethoxylates of alkyl carboxylates, alkyl polyglycosides and mixtures thereof.

45. The solid film lubricant of claim 38, wherein the surfactant is present in an amount of about 0.05% to 10% of the total weight of the dry film composition.

46. The solid film lubricant of claim 38, wherein the surfactant is present in an amount of about 1.0% to 5% of the total weight of the solid film lubricant.

42. The solid film lubricant of claim 38, wherein the surfactant is present in an amount of about 1%of the total weight of the solid film lubricant.

43. The solid film lubricant of claim 38 further comprising a wetting agent.

44. The solid film lubricant of claim 43 wherein the wetting agent is selected from the group consisting of nonionic fluorosurfactants, anionic fluorosurfactants, ethoxylated tetramethyldecynediols, dialkylsulfosuccinates, and mixtures thereof.

45. The solid film lubricant of claim 43 wherein the wetting agent is a fluoroaliphatic ethoxylate.

46. The solid film lubricant of claim 43 wherein the wetting agent is a present in an amount of 0.1% to 1.0% of the weight of the dry film composition.

47. The solid film lubricant of claim 43 wherein the wetting agent is a present in an amount of 0.1% to 0.5% of the weight of the dry film composition.

48. A solid film lubricant comprising:

a wax; and

a wetting agent,

wherein the solid film lubricant has the characteristic that the

coefficient of friction is reduced when the solid film lubricant is wetted as compared to the coefficient of friction of the solid film lubricant is unwetted.

49. The solid film lubricant of claim 48, wherein the wax is selected from the group consisting of carnauba wax, candelilla wax, montan wax, microcrystalline waxes, solid alcohols, solid esters, and oxidized petroleum waxes.

50. The solid film lubricant of claim 48, wherein the wax is a primary alcohols having at least 18 carbon atoms per molecule.

51. The solid film lubricant of claim 48, wherein the wax is an ester of a primary alcohol having at least 18 carbon atoms per molecule with an organic acid.

52. The solid film lubricant of claim 48, wherein the organic acid is an unbranched monoacid, having at least 18 carbon atoms per molecule.

53. The solid film lubricant of claim 48 wherein the wetting agent is selected from the group consisting of nonionic fluorosurfactants, anionic fluorosurfactants, ethoxylated tetramethyldecynediols, acetylenic glycol-based surfactants, dialkylsulfosuccinates, and mixtures thereof.

54. The solid film lubricant of claim 48 wherein the wetting agent is a fluoroaliphatic ethoxylate.

55. The solid film lubricant of claim 48 wherein the wetting agent is a present in an amount of 0.1% to 1.0% of the weight of the dry film composition.

56. The solid film lubricant of claim 48 wherein the wetting agent is a present in an amount of 0.1% to 0.5% of the weight of the dry film composition.